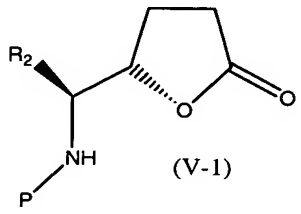
What is claimed is:

1. A method of making a compound of the formula (V-1):



(V-1)

wherein:

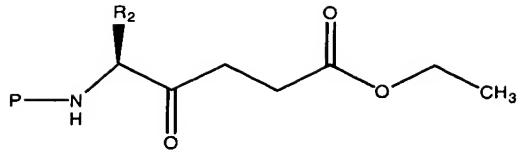
P is a protecting group;

R_2 is phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$-, $(C_1$-$C_6)$alkyl or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl, naphthyl, $(C_3$-$C_{10})$cycloalkyl or $(C_2$-$C_9)$heteroaryl moieties of said phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$- groups may be optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, hydroxy, hydroxy-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkoxy$(C_1$-$C_6)$alkyl, HO-(C=O)-, $(C_1$-$C_6)$alkyl-O-(C=O)-, HO-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-O-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-(C=O)-O-, $(C_1$-$C_6)$alkyl-(C=O)-O-$(C_1$-$C_6)$alkyl, H(O=C)-, H(O=C)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(O=C)-, $(C_1$-$C_6)$alkyl(O=C)-$(C_1$-$C_6)$alkyl, NO_2, amino, $(C_1$-$C_6)$alkylamino, $[(C_1$-$C_6)$alkyl$]_2$amino, amino$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylamino$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$amino$(C_1$-$C_6)$alkyl, H_2N-(C=O)-, $(C_1$-$C_6)$alkyl-NH-(C=O)-, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-, H_2N(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-HN(C=O)-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-$(C_1$-$C_6)$alkyl, H(O=C)-NH-, $(C_1$-$C_6)$alkyl(C=O)-NH, $(C_1$-$C_6)$alkyl(C=O)-[NH]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(C=O)-[N$(C_1$-$C_6)$alkyl]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-S-, $(C_1$-$C_6)$alkyl-(S=O)-, $(C_1$-$C_6)$alkyl-SO_2-, $(C_1$-$C_6)$alkyl-SO_2-NH-, H_2N-SO_2-, H_2N-SO_2-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylHN-SO_2-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-SO_2-$(C_1$-$C_6)$alkyl, CF_3SO_3-, $(C_1$-$C_6)$alkyl-SO_3-, phenyl, phenoxy, benzyloxy, $(C_3$-$C_{10})$cycloalkyl, $(C_2$-$C_9)$heterocycloalkyl, and $(C_2$-$C_9)$heteroaryl; and

m is 0, 1, 2, 3, or 4;

wherein the method comprises:

a) reacting a compound of the formula (VIh-1)

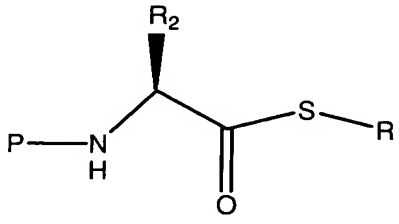


(VIh-1)

with a reducing agent, and

c) cyclizing the compound so formed with heat and an acid catalyst.

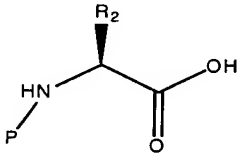
2. The method of claim 1, further comprising formation of the compound of the formula (VIh-1) by reacting a compound of the formula (VIIa-1)



(VIIa-1),

wherein R is a (C_1-C_{20})alkyl, (C_3-C_{10})cycloalkyl, aryl, or (C_2-C_9)heteroaryl with an organozinc compound in the presence of a palladium catalyst and a racemization scavenger.

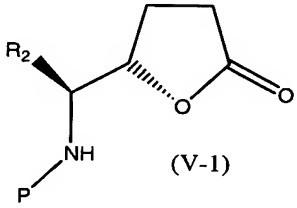
3. The method of claim 2, further comprising formation of the compound of the formula (VIIa-1) by reacting a compound of the formula (VIII-1)



(VIII-1)

with a compound of the formula HS-R.

4. A method of making a compound of the formula (V-1):



(V-1)

wherein:

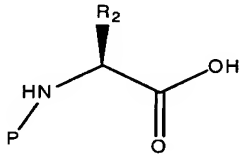
P is a protecting group;

R_2 is phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$-, $(C_1$-$C_6)$alkyl or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl, naphthyl, $(C_3$-$C_{10})$cycloalkyl or $(C_2$-$C_9)$heteroaryl moieties of said phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$- groups may be optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, hydroxy, hydroxy-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkoxy$(C_1$-$C_6)$alkyl, HO-(C=O)-, $(C_1$-$C_6)$alkyl-O-(C=O)-, HO-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-O-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-(C=O)-O-, $(C_1$-$C_6)$alkyl-(C=O)-O-$(C_1$-$C_6)$alkyl, H(O=C)-, H(O=C)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(O=C)-, $(C_1$-$C_6)$alkyl(O=C)-$(C_1$-$C_6)$alkyl, NO_2, amino, $(C_1$-$C_6)$alkylamino, $[(C_1$-$C_6)$alkyl$]_2$amino, amino$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylamino$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$amino$(C_1$-$C_6)$alkyl, H_2N-(C=O)-, $(C_1$-$C_6)$alkyl-NH-(C=O)-, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-, H_2N(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-HN(C=O)-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-$(C_1$-$C_6)$alkyl, H(O=C)-NH-, $(C_1$-$C_6)$alkyl(C=O)-NH, $(C_1$-$C_6)$alkyl(C=O)-[NH]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(C=O)-[N$(C_1$-$C_6)$alkyl]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-S-, $(C_1$-$C_6)$alkyl-(S=O)-, $(C_1$-$C_6)$alkyl-SO_2-, $(C_1$-$C_6)$alkyl-SO_2-NH-, H_2N-SO_2-, H_2N-SO_2-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylHN-SO_2-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-SO_2-$(C_1$-$C_6)$alkyl, CF_3SO_3-, $(C_1$-$C_6)$alkyl-SO_3-, phenyl, phenoxy, benzyloxy, $(C_3$-$C_{10})$cycloalkyl, $(C_2$-$C_9)$heterocycloalkyl, and $(C_2$-$C_9)$heteroaryl; and

m is 0, 1, 2, 3, or 4;

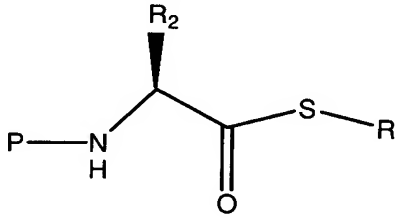
wherein the method comprises:

a) reacting a compound of the formula (VIII-1)



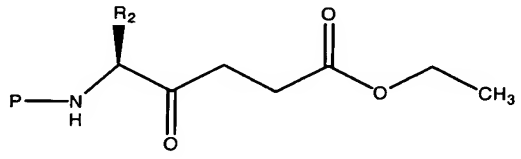
(VIII-1)

with a compound of the formula HS-R, wherein R is a $(C_1$- $C_{20})$alkyl, $(C_3$-$C_{10})$cycloalkyl, aryl, or $(C_2$-$C_9)$heteroaryl, to form a compound of the formula (VIIa-1)



(VIIa-1);

b) reacting the compound so formed with an organozinc compound in the presence of a palladium catalyst and a racemization scavenger to form a compound of the formula (VIh-1)

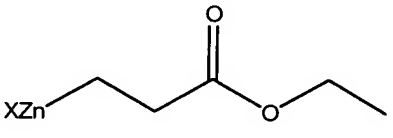


(VIh-1);

c) reacting the compound so formed with a reducing agent; and

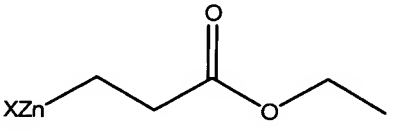
e) cyclizing the compound so formed with heat and an acid catalyst.

5. The method of claim 2, wherein with the organozinc compound has the formula formula X-Zn-(C_1-C_6)alkyl-(C=O)-O-R, wherein X is a halogen and R is a (C_1-C_{20})alkyl, (C_3-C_{10})cycloalkyl, aryl, or (C_2-C_9)heteroaryl.



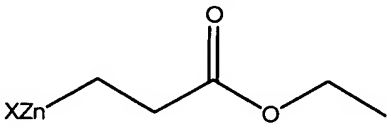
, wherein X is a halogen.

6. The method of claim 4, wherein with the organozinc compound has the formula formula X-Zn-(C_1-C_6)alkyl-(C=O)-O-R, wherein X is a halogen and R is a (C_1-C_{20})alkyl, (C_3-C_{10})cycloalkyl, aryl, or (C_2-C_9)heteroaryl.



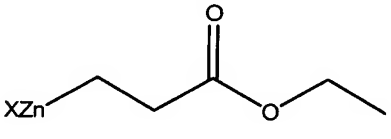
, wherein X is a halogen.

7. The method of claim 2, wherein with the organozinc compound has the formula



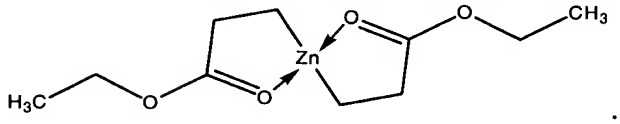
, wherein X is a halogen.

8. The method of claim 4, wherein with the organozinc compound has the formula

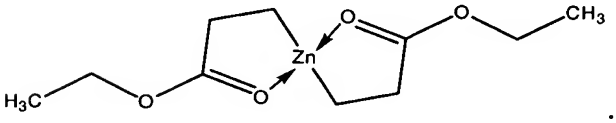


, wherein X is a halogen.

9. The method of claim 2, wherein the organozinc compound has the formula



10. The method of claim 4, wherein the organozinc compound has the formula



11. The method of claim 2, wherein the racemization scavenger is a carboxylic acid anhydride or a carboxylic acid ester.

12. The method of claim 4, wherein the racemization scavenger is a carboxylic acid anhydride or a carboxylic acid ester.

13. The method of claim 2, wherein the racemization scavenger has the formula aryl-(C=O)-O-(C=O)-aryl, R-(C=O)-O-aryl, or aryl-(C=O)-O-aryl.

14. The method of claim 4, wherein the racemization scavenger has the formula aryl-(C=O)-O-(C=O)-aryl, R-(C=O)-O-aryl, or aryl-(C=O)-O-aryl.

15. The method of claim 13, wherein the racemization scavenger is phthalic anhydride, 4-nitrophenyl acetate, or 4-fluorophenyl acetate.

16. The method of claim 14, wherein the racemization scavenger is phthalic anhydride, 4-nitrophenyl acetate, or 4-fluorophenyl acetate.

17. The method of claim 1, wherein P is carbobenzyloxy, t-butoxy carbonyl or 9-fluorenyl-methylenoxycarbonyl.

18. The method of claim 4, wherein P is carbobenzyloxy, t-butoxy carbonyl or 9-fluorenyl-methylenoxycarbonyl.

19. The method of claim 1, wherein P is t-butoxy carbonyl.

20. The method of claim 4, wherein P is t-butoxy carbonyl.

21. The method of claim 1, wherein R_2 is phenyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl or $(C_2$-$C_9)$heteroaryl moieties may be optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, or hydroxy.

22. The method of claim 4, wherein R_2 is phenyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl or $(C_2$-$C_9)$heteroaryl moieties may be optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, or hydroxy.

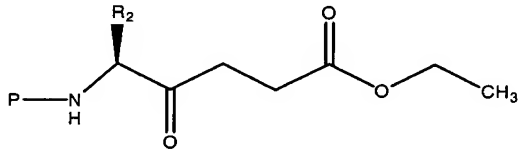
23. The method of claim 1, wherein R_2 is 3-fluoro-benzyl.

24. The method of claim 4, wherein R_2 is 3-fluoro-benzyl.

25. The method of claim 2, wherein R is a $(C_1$-$C_6)$alkyl, aryl, or $(C_2$-$C_9)$heteroaryl.

26. The method of claim 4, wherein R is a $(C_1$-$C_6)$alkyl, aryl, or $(C_2$-$C_9)$heteroaryl.

27. A compound of the formula (VIh-1)



(VIh-1),

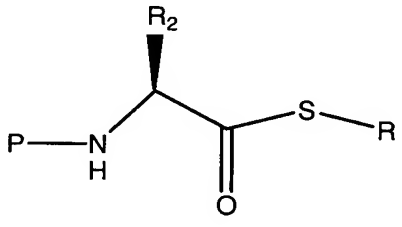
wherein:

P is a protecting group;

R_2 is phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$-, $(C_1$-$C_6)$alkyl or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl, naphthyl, $(C_3$-$C_{10})$cycloalkyl or $(C_2$-$C_9)$heteroaryl moieties of said phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$- groups may be optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, hydroxy, hydroxy-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkoxy$(C_1$-$C_6)$alkyl, HO-(C=O)-, $(C_1$-$C_6)$alkyl-O-(C=O)-, HO-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-O-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-(C=O)-O-, $(C_1$-$C_6)$alkyl-(C=O)-O-$(C_1$-$C_6)$alkyl, H(O=C)-, H(O=C)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(O=C)-, $(C_1$-$C_6)$alkyl(O=C)-$(C_1$-$C_6)$alkyl, NO_2, amino, $(C_1$-$C_6)$alkylamino, $[(C_1$-$C_6)$alkyl$]_2$amino, amino$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylamino$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$amino$(C_1$-$C_6)$alkyl, H_2N-(C=O)-, $(C_1$-$C_6)$alkyl-NH-(C=O)-, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-, H_2N(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-HN(C=O)-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-$(C_1$-$C_6)$alkyl, H(O=C)-NH-, $(C_1$-$C_6)$alkyl(C=O)-NH, $(C_1$-$C_6)$alkyl(C=O)-[NH]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(C=O)-[N$(C_1$-$C_6)$alkyl]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-S-, $(C_1$-$C_6)$alkyl-(S=O)-, $(C_1$-$C_6)$alkyl-SO_2-, $(C_1$-$C_6)$alkyl-SO_2-NH-, H_2N-SO_2-, H_2N-SO_2-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylHN-SO_2-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-SO_2-$(C_1$-$C_6)$alkyl, CF_3SO_3-, $(C_1$-$C_6)$alkyl-SO_3-, phenyl, phenoxy, benzyloxy, $(C_3$-$C_{10})$cycloalkyl, $(C_2$-$C_9)$heterocycloalkyl, and $(C_2$-$C_9)$heteroaryl; and

m is 0, 1, 2, 3, or 4.

28. A compound of the formula (VIIa-1)



(VIIa-1),

wherein:

P is a protecting group;

R is a $(C_1$- $C_{20})$alkyl, $(C_3$-$C_{10})$cycloalkyl, aryl, or $(C_2$-$C_9)$heteroaryl;

R_2 is phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$-, $(C_1$-$C_6)$alkyl or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl, naphthyl, $(C_3$-$C_{10})$cycloalkyl or $(C_2$-$C_9)$heteroaryl moieties of said phenyl-$(CH_2)_m$-, naphthyl-$(CH_2)_m$-, $(C_3$-$C_{10})$cycloalkyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$- groups may be

optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, hydroxy, hydroxy-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$alkoxy$(C_1$-$C_6)$alkyl, HO-(C=O)-, $(C_1$-$C_6)$alkyl-O-(C=O)-, HO-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-O-(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-(C=O)-O-, $(C_1$-$C_6)$alkyl-(C=O)-O-$(C_1$-$C_6)$alkyl, H(O=C)-, H(O=C)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(O=C)-, $(C_1$-$C_6)$alkyl(O=C)-$(C_1$-$C_6)$alkyl, NO_2, amino, $(C_1$-$C_6)$alkylamino, $[(C_1$-$C_6)$alkyl$]_2$amino, amino$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylamino$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$amino$(C_1$-$C_6)$alkyl, H_2N-(C=O)-, $(C_1$-$C_6)$alkyl-NH-(C=O)-, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-, H_2N(C=O)-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-HN(C=O)-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-(C=O)-$(C_1$-$C_6)$alkyl, H(O=C)-NH-, $(C_1$-$C_6)$alkyl(C=O)-NH, $(C_1$-$C_6)$alkyl(C=O)-[NH]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl(C=O)-[N$(C_1$-$C_6)$alkyl]$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkyl-S-, $(C_1$-$C_6)$alkyl-(S=O)-, $(C_1$-$C_6)$alkyl-SO_2-, $(C_1$-$C_6)$alkyl-SO_2-NH-, H_2N-SO_2-, H_2N-SO_2-$(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkylHN-SO_2-$(C_1$-$C_6)$alkyl, $[(C_1$-$C_6)$alkyl$]_2$N-SO_2-$(C_1$-$C_6)$alkyl, CF_3SO_3-, $(C_1$-$C_6)$alkyl-SO_3-, phenyl, phenoxy, benzyloxy, $(C_3$-$C_{10})$cycloalkyl, $(C_2$-$C_9)$heterocycloalkyl, and $(C_2$-$C_9)$heteroaryl; and
m is 0, 1, 2, 3, or 4.

29. The compound of claim 27, wherein P is carbobenzyloxy, t-butoxy carbonyl or 9-fluorenyl-methylenoxycarbonyl.

30. The compound of claim 28, wherein P is carbobenzyloxy, t-butoxy carbonyl or 9-fluorenyl-methylenoxycarbonyl.

31. The compound of claim 29, wherein P is t-butoxy carbonyl.

32. The compound of claim 30, wherein P is t-butoxy carbonyl.

33. The compound of claim 27, wherein R_2 is phenyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl or $(C_2$-$C_9)$heteroaryl moieties may be optionally substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, $(C_1$-$C_6)$alkyl, or hydroxy.

34. The compound of claim 28, wherein R_2 is phenyl-$(CH_2)_m$- or $(C_2$-$C_9)$heteroaryl-$(CH_2)_m$-, wherein each of said phenyl or $(C_2$-$C_9)$heteroaryl moieties may be optionally

substituted with one, two, or three substituents independently selected from the group consisting of hydrogen, halogen, CN, (C_1-C_6)alkyl, or hydroxy.

35. The compound of claim 33, wherein R_2 is 3-fluoro-benzyl.

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36. The compound of claim 34, wherein R_2 is 3-fluoro-benzyl.